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ALASKA
REVIEW OF SOCIAL AND ECONOMIC CONDITIONS

UNIVERSITY OF ALASKA ANCHORAGE, INSTITUTE OF SOCIAL AND ECONOMIC RESEARCH JUNE 1991, VOL. XXVIII, NO. 1

# Hunting and Fishing in Southeast Alaska

In most southeast Alaska towns, households that don't hunt and fish are unusual. A recent survey of 30 southeast communities found that about 85 percent of households get at least some of their food by hunting and fishing.

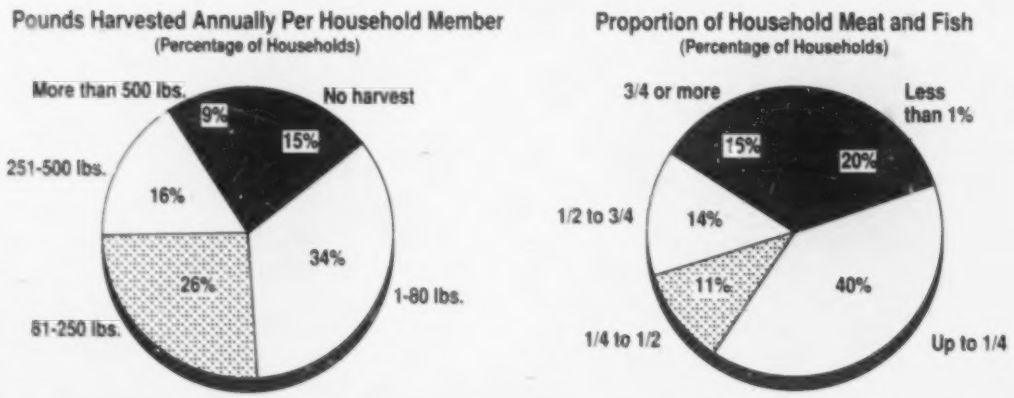
But among the thousands of households that hunt and fish, there are significant differences. Figure 1 shows that while 34 percent of survey households annually harvest just 1 to 80 pounds of fish and game per household member, nearly 10 percent harvest more than 500 pounds per household member.[1] And while some households do not eat any wild fish and game, nearly a third of survey households get half or more of their total meat and fish by hunting and fishing.

These are among the findings of the Tongass Resource Use Cooperative Study (TRUCS), a 1988 survey carried out jointly by the Institute of Social and Economic Research, the Alaska Department of Fish and Game, and the U.S. Forest Service. The study documents hunting and fishing for household use in all permanent southeast Alaska communities except the largest, Juneau and Ketchikan.[2]

This *Review* presents the findings of that survey. It also discusses how this kind of information could be useful to state policymakers trying to define who should be classified as subsistence users, and to federal and state land managers charged with protecting subsistence uses on public lands.

Below we first outline the survey purpose and coverage, and highlight some of the most interesting survey findings. Next we briefly describe the ongoing debate about subsistence in Alaska, and outline the differing positions of the federal and state governments. We then present the detailed survey findings and assess how this kind of information could be useful in future policy and management decisions about subsistence uses.

## Figure 1. Importance of Hunting and Fishing to Survey Households



ALASKA REVIEW OF SOCIAL AND ECONOMIC CONDITIONS

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## Study Purpose and Methods

The Tongass Resource Use Cooperative Study (TRUCS) is part of the U.S. Forest Service's effort to develop a database on subsistence uses in southeast Alaska. That database is to be used in planning and management activities for the Tongass National Forest, which covers nearly 17 million acres in southeast Alaska. Under terms of the 1980 Alaska National Interest Lands Conservation Act, the Forest Service and other federal land managers are required to assess and then avoid or minimize the effects of any planned activities on subsistence uses.

The 30 survey communities are shown on Map 1. TRUCS excluded residents of the region's two largest communities because at the time of the survey both federal and state law said that subsistence users by definition had to live in rural communities. Juneau and Ketchikan were classified as urban, while all other southeast communities were classified as rural.

Throughout this *Review*, we refer to the survey households as "rural"—not because of some definition of our own, but because that's how the federal and state governments classified them at the time of the survey.

The TRUCS findings include *all hunting and fishing for household use* by residents of the survey communities. Only commercial fish catches are excluded. (Fish that commercial fishermen take from commercial catches for personal use are included.)

That means the survey covered hunting and fishing done under sport licenses, subsistence permits, or any other classification that existed at the time for non-commercial harvests. Researchers included all hunting and fishing for household use—regardless of how it was classified—because that broad definition allowed them to capture data on all personal uses of fish and wildlife in the survey communities.

## Highlights of Findings

- No single group makes up a majority of those who hunt and fish in rural southeast Alaska. Hunting and fishing are widespread among richer and poorer households, Natives and non-Natives, old-timers and newcomers.

- Nearly a third of rural households in southeast Alaska get at least half their meat and fish by hunting and fishing.

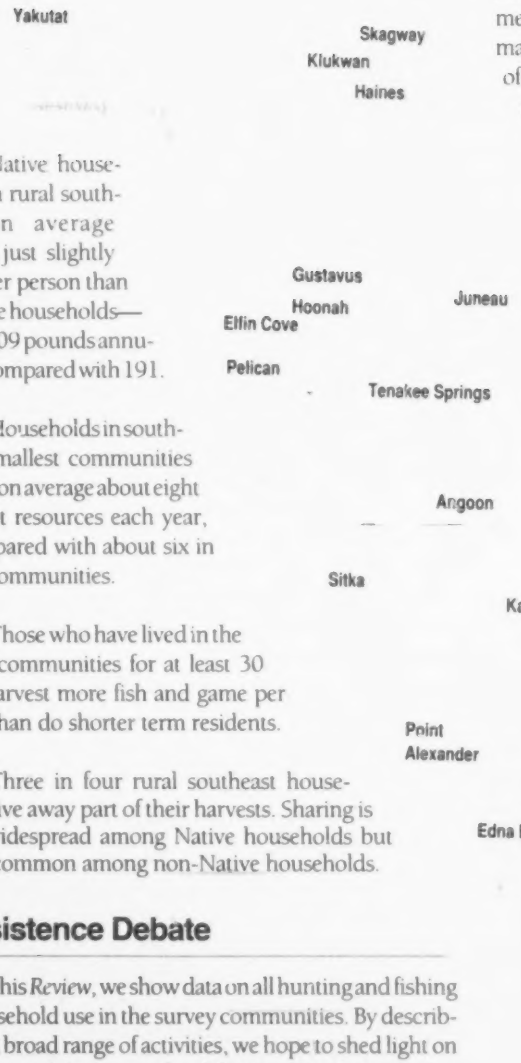
- Fish and game are widely preferred sources of food among southeast households, regardless of their incomes.

- About 16 percent of non-Native and 30 percent of Native households in the survey communities fit what is probably the most common image of subsistence users—those with low incomes who get a big share of their food by harvesting a wide variety of fish and game.

- Low-income households in the survey communities harvest less fish and game per person—about 194 pounds annually—than do households with higher incomes, which harvest on average 238 pounds per person.

• High-income households in the survey communities have a competitive advantage in hunting and fishing, because they can afford to buy better equipment and to travel further.

**Map 1.**
**Southeast Alaska**




• Native households in rural southeast on average harvest just slightly more per person than do white households—about 209 pounds annually as compared with 191.

• Households in southeast's smallest communities harvest on average about eight different resources each year, as compared with about six in larger communities.

• Those who have lived in the survey communities for at least 30 years harvest more fish and game per capita than do shorter term residents.

• Three in four rural southeast households give away part of their harvests. Sharing is most widespread among Native households but is also common among non-Native households.

## Subsistence Debate

In this *Review*, we show data on all hunting and fishing for household use in the survey communities. By describing that broad range of activities, we hope to shed light on the current debate over the *definition* of "subsistence"—which is a specially designated kind of hunting and fishing activity carried out by specified users.

Federal and state laws agree that subsistence users should have first rights to fish and game in Alaska, and that subsistence users are those who have "customary and direct dependence" on fish and game as "the mainstay of livelihood." In other words, subsistence users are, broadly speaking, those who rely on fish and game to help sustain them and who have traditionally hunted and fished.

It is deciding who meets those criteria that has split the federal and state governments and divided Alaskans in general. In 1990 the state's failure to agree with the federal definition of subsistence users led to a division in management of Alaska's fish and game. The state government had managed fish and game throughout Alaska from the time of statehood. In 1990 the federal government took over management of hunting and some fishing on federal lands. The state retained management authority over fish and game on state and private lands and over fisheries in navigable waters and intertidal areas.

### Chronology of Events

The box on page 5 outlines major federal and state laws and court decisions that have affected the subsistence issue in recent times and led us to the current federal-state impasse. Controversy over who should qualify as a subsistence user and how fish and game should be allocated among subsistence, sport, and commercial users became particularly heated in the

past 15 years or so, as the state population grew rapidly and put more pressure on limited resources.

The first major law affecting subsistence in recent times was the Alaska Native Claims Settlement Act of 1971. That act settled aboriginal land claims of Alaska Natives by awarding them land and money and at the same time extinguished aboriginal hunting and fishing rights. However, the conference report accompanying the settlement act said that the U.S. Department of the Interior and the State of Alaska would protect Native subsistence rights.

The next major step came in 1978, when the state government enacted a law awarding subsistence users first rights to fish and game without defining who these subsistence users were.

Two years later, in 1980, Congress passed the Alaska National Interest Lands Conservation Act (ANILCA), which designated large blocks of federal land for inclusion in the national conservation system and also gave subsistence users priority rights to fish and game on federal lands. ANILCA defines subsistence users specifically as *rural* residents, with rural places apparently to be determined by population. To continue managing fish and game on federal lands, the state government had to comply with the federal definition of subsistence.

In the early 1980s sportsmen's groups gathered enough support for a ballot initiative asking voters whether or not the state should repeal its subsistence preference law. Alaskans voted to keep the subsistence priority, and soon after state officials established regulations making rural residence a criteria for subsistence users. But those regulations were challenged in court, and in 1985 the Alaska Supreme Court ruled them inconsistent with the state subsistence law, which did not impose a rural residency requirement.

The Alaska Legislature in 1986 changed the law to specify that subsistence users had to be rural residents, with rural places to be determined by economic dependence on subsistence. The Alaska Boards of Fish and Game began designating communities as either urban or rural.

The Kenaitze Indians of the Kenai Peninsula then challenged the state's definition of rural—which excluded them because they lived in an area the state classified as urban. In 1988 the federal Ninth Circuit Court of Appeals ruled that the state's definition of rural was inconsistent with ANILCA's definition—because ANILCA defined rural places by population, and the state law defined rural places by economic dependence on subsistence.

The second big challenge to the state law limiting subsistence users to rural residents came from several Alaskans who had hunted and fished in the past but were disqualified as subsistence users because they lived in areas the state classified as urban.

In that landmark 1989 case, *McDowell vs. Collingsworth*, the Alaska Supreme Court ruled that designating just rural residents as subsistence users violated several provisions of the Alaska Constitution that limit the state's authority to create exclusionary classes.

The justices also noted, however, that they *were not* ruling that "everyone can engage in subsistence hunting or fishing," or that the state could not use any method of exclusion to protect fish and wildlife. They ruled that using area of residence as a method of determining subsistence users is unconstitutional, and that there is ample evidence past subsistence users have included both urban and rural Alaskans. They suggested that the state look instead to subsistence criteria based on individual characteristics of applicants, rather than to just their place of residence.

The Supreme Court's decision meant that the state no longer complied with the federal requirement of rural preference—so, as noted earlier, the federal government in 1990 took back authority to manage game and some fisheries on federal lands.

As of mid-1991 it was unclear how or when the federal and state governments would resolve their disagreement. An advisory council appointed by Governor Walter Hickel to make recommendations for state subsistence policy in the wake of the *McDowell* decision so far had failed to reach a consensus on recommendations. State fish and game managers were wrestling, in the absence of new policy guidelines, with the problem of who would be classified as a subsistence user for the upcoming fishing and hunting seasons. Federal game managers had made relatively few changes in hunting regulations and had essentially maintained the same urban-rural designations the state used when it managed game on federal lands.

The only thing that seems certain is that controversy will continue as federal and state officials sort through the complicated maze of legal, political, constitutional, economic, and cultural issues that are parts of the subsistence question. In fact, management of fish and game has become more complicated since the *McDowell* decision. This is especially true in areas where the boundaries of state, federal, and private lands meet because regulations and management priorities on these lands may conflict. Next we briefly describe the kinds of fish and game allocation issues that have come up in the ongoing subsistence controversy, particularly in southeast Alaska.

## Major Federal and State Laws and Court Decisions Affecting Subsistence, 1971-1991

**1971—Alaska Native Claims Settlement Act (ANCSA)**: The federal law settling aboriginal land claims of Alaska Natives makes no provision for subsistence rights, but the accompanying conference committee report says "The Conference Committee expects both the Secretary (of the Interior) and the State (of Alaska) to take any action necessary to protect the subsistence needs of the Natives." (S. Rpt. 92-581, 92nd Congress, 1st Session, December 14, 1971.)

**1978—State Subsistence Preference Law:** The state government enacts legislation giving subsistence hunting and fishing priority over other uses and describing subsistence as "customary and traditional uses of . . . wild, renewable resources for direct personal or family consumption . . . ." (Alaska Statutes 16.05.940 (26))

**1980—Alaska National Interest Lands Conservation Act (ANILCA)**: The federal law designating large tracts of federal land in Alaska for inclusion in the national conservation system also gives priority to subsistence hunting and fishing on federal land. Subsistence uses are defined as "customary and traditional uses *by rural Alaska residents* of wild, renewable resources for direct personal or family consumption . . . ." (ANILCA Section 804, 16 USCA, 3114.)

**1982—Ballot Initiative on State Subsistence Law:** Alaska voters are asked whether they want to repeal or keep the state law giving subsistence uses priority over other uses. Alaskans vote to retain subsistence priority by 58 percent to 42 percent.

**1985—Madison vs. Alaska Department of Fish and Game:** The Alaska Supreme Court rules that existing state regulations limiting subsistence users to rural residents are inconsistent with the state law (and therefore invalid) because the law itself does not restrict subsistence users to rural residents. (696 P. 2d 168.)

**1986—State Subsistence Law Revised**: The Alaska Legislature revises state law to say that subsistence hunting and fishing are limited to residents "*domiciled in a rural area of the state*." The revised law also defines rural as "a community or area . . . in which the noncommercial, customary, and traditional use of fish and game for personal or family consumption is a principal characteristic of the economy. . . ." (Alaska Statutes 16.05.940(25).)

**1988—Kenaitze Indian Tribe vs. State of Alaska:** The federal Ninth Circuit Court of Appeals rules that the state's definition of rural in the 1986 statute is inconsistent with the federal definition in ANILCA. The court interprets ANILCA's definition to include all "sparsely populated" areas without particular reference to whether the economies of those areas are subsistence-oriented. (860 F.2d 312, 314.)

**1989—McDowell vs. Collingsworth**: The Alaska Supreme Court rules that the state law basing subsistence rights on place of residence is unconstitutional. The majority opinion says "the grant of special privileges with respect to game based on one's residence" violates provisions of Alaska's constitution that guarantee all Alaskans equal access to fish and game and prohibit the state from creating "exclusive or special privileges with respect to fish and game" (Sections 3, 15, and 17 of Article 8). However, the court upholds the state's right to grant subsistence users priority, and says that criteria other than just place of residence *might* be constitutional. (Opinion, the Supreme Court of the State of Alaska, No. 3540, December 22, 1989.)

**1990—Federal Takeover of Management on Federal Lands:** In the wake of the *McDowell* decision, state law no longer complies with provisions of ANILCA restricting subsistence users to rural residents. The federal government takes over management of hunting and some fishing on federal lands. The state retains management of fish and game on state and private lands and of fisheries in navigable waters and in intertidal areas.

**1991—Governor's Advisory Council on Subsistence**: The governor appoints a task force to make recommendations for a revised state subsistence policy, including new criteria for determining subsistence users.

## Hunting and Fishing Allocation Issues

Alaska's population rose by 37 percent from 1980 to 1990. As more people have moved into the state, the number of people who want to hunt and fish has increased. However, the supply of fish and game is limited. Primarily because of Alaska's increased population, problems over allocating limited natural resources have increased. While these problems are pervasive throughout the state, the specific conflicts vary by region.

In most parts of the state, commercial fisheries and subsistence compete for the same fisheries. Allocation of fish is made difficult by complex runs and harvest policies which must give priority to subsistence users, even though their harvests may take place upstream and come after commercial harvests. In southeast Alaska, competition between commercial and subsistence fishermen arises most frequently over salmon, halibut, and shellfish.

Competition also arises between sport and subsistence users of fish and game. These groups, both of whom hunt and fish for personal use, differ in the methods they use, the seasons they are allowed to hunt and fish, and the quotas they can harvest. Again, these conflicts have become more prevalent as the number of people who hunt and fish has increased.

With increased population has also come more development, causing competition over different resources in the same area. Resource development in subsistence use areas can have significant impacts on fish and wildlife populations. Potential effects of oil and gas exploration and production, mineral mining, and timber harvesting must be examined before resource development occurs. In southeast Alaska, the effect of timber harvesting on hunting and fishing is a primary issue among residents. Many residents feel that fisheries and deer populations are deteriorating as a result of clear-cutting, but the debate is far from settled.

What has particularly brought allocation issues to the forefront in recent years in the Tongass National Forest and on other federal lands is that ANILCA specifically requires land managers to assess potential effects on subsistence uses of any planned activities; to determine that there are no alternatives to activities that may affect subsistence uses; and to find ways of minimizing the effects on subsistence uses. The Tongass Resource Use Cooperative Study itself is part of the Forest Service's efforts to meet those requirements of ANILCA.

## Tongass Resource Use Cooperative Survey

As legal battles over subsistence continue, the need for a comprehensive, well-informed approach grows. The same factors—population growth, resource development, increased sport and commercial harvests, and economic and cultural changes—affect subsistence uses regardless of who controls Alaska's fish and game. Both federal and state agencies have continually called for more information before making decisions about subsistence uses. Yet, as we've seen, most recent decisions have been forced through court cases.

The U.S. Fish and Wildlife Service, which now plays the lead role in determining subsistence regulations on federal lands, has identified the need for additional information on the distribution and exchange of subsistence goods; for quantitative data on subsistence resource harvest amounts; for data on harvest and subsistence use of furbearers and marine mammals; and for a comprehensive computerized database of existing information.[3] The Subsistence Division of the Alaska Department of Fish and Game has been collecting data at the community level for over a decade. However, since many subsistence issues are regionwide, there is also a need for compatible, concurrent regional data.

Much of this type of data is available for the southeast Alaska region from the Tongass Resource Use Cooperative Survey (TRUCS). The survey documented the level and role of hunting and fishing in the lives of rural southeast residents through detailed questions on harvest amounts, types, and methods for one year of activities. Interviewers also asked where and how intensively residents hunt and fish throughout the region. So TRUCS supplies two broad kinds of data: harvest data specifically for one year, but which we can assume to be fairly representative of harvests in other recent years; and life-long geographic data on areas hunted and fished.

While we can't make any recommendations as to how the tangle of subsistence issues should be resolved, we can suggest how the type of data collected in this survey can be useful in answering some of the questions that arise.

TRUCS data cover all hunting and fishing for household use by rural southeast residents. As we noted earlier, the survey included hunting and fishing done under sport licenses, subsistence permits, and any other personal use classification that existed in 1988.

So TRUCS covers the universe of potential subsistence users in rural southeast Alaska. It does not simply look at community size or Native/non-Native differences in hunting and fishing, but rather takes into account all the characteristics of those who hunt and fish in the survey communities. Who will ultimately be classified as subsistence users will depend on future federal and state policy and management decisions—but long-term, comprehensive data could provide part of the basis for future policy and management decisions.

In the following pages we describe some of the most interesting and potentially useful TRUCS findings. In the figures that accompany the narrative, we report fish and game harvests in several ways: in harvest per household member, in harvest per household, and in total harvest per community. Each illustrates different aspects of the TRUCS findings. When we use income as a variable, we mean (unless otherwise noted) income per household member. That measure provides a better picture of relative household income than total household income, because the size of households varies substantially.

Also, because we don't have the space to look at the survey results for each of the 30 communities we surveyed, we show mostly averages across communities. But there are significant differences among communities, and to illustrate some of those we selected several sample communities, representing the spectrum of rural southeast communities from the smallest to the largest. Table 1 shows the number of households and survey interviews conducted in the selected communities.

**Table 1. Selected Communities By Size**

| Community | Number of Occupied Households | Number of Interviews |
|---|---|---|
| Edna Bay | 21 | 20 |
| Pelican | 82 | 48 |
| Angoon | 140 | 46 |
| Skagway | 204 | 60 |
| Hoonah | 219 | 62 |
| Klawock | 224 | 52 |
| Wrangell | 1,013 | 75 |
| Petersburg | 1,140 | 54 |
| Sitka | 2,872 | 296 |

## Characteristics of Households

### Differences Among All Households

- ***Only 19 percent of all rural southeast Alaska households fit the most common image of subsistence users.***

- ***No single group of households with similar characteristics makes up a majority of those who hunt and fish in southeast Alaska.***

- ***For many households, hunting and fishing is a matter of choice—a lifestyle that is desired, not an economic need.***

When government officials set laws and regulations for subsistence use, one question asked is, what are the characteristics of the subsistence user? The subsistence user many of us probably think of first has a low income, derives a high percent of food from fish and game harvests, and uses a wide range of natural resources.

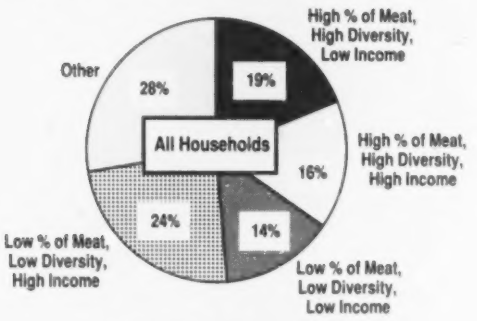
To estimate how many rural southeast Alaska households fit this common image, we split survey households into categories based on their incomes; the amount of their total meat and fish they obtain through hunting and fishing; and the number of different species they harvest.

We classified households using five or more different species as "high diversity" and those using fewer than five different species as "low diversity." Households that harvest more than 25 percent of their meat and fish are classified under "high percent of meat"; those harvesting 25 percent or less are "low percent of meat." Households earning $10,000 or more per household member annually are classified under "high income"; those earning less than $10,000 per household member annually are "low income." We then combined those measures in several different ways, as shown in Figure 2.

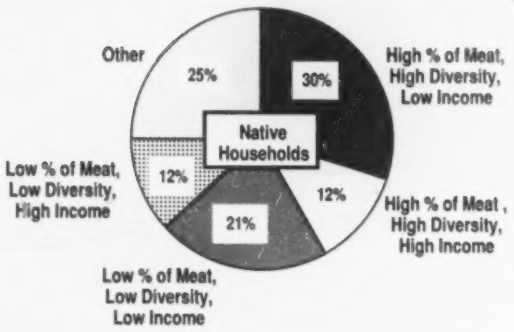
The group that best fits the most common image of the subsistence user includes households with low incomes, high diversity of resources harvested, and high percentage of meat obtained through hunting and fishing. That group accounts for 19 percent of rural southeast households. However, another 16 percent of households have high incomes but also use a wide variety of resources to provide a high percentage of their meat.

And not all low-income households harvest a large portion of their food: 14 percent of all households have low incomes but harvest less than a quarter of their total

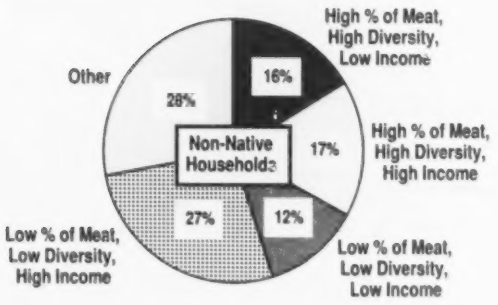
## Figure 2. Characteristics of Households




Total Households: 7,293




Native Households: 1,595




Non-Native Households: 5,698

meat and fish. Another 24 percent of rural southeast households have high incomes and derive less than 25 percent of their meat and fish from fewer than five species—which shows that many households depend on hunting and fishing for at least some of their food needs. ("Other" households in Figure 2 are those with varying incomes who either obtain a low percentage of their meat through hunting and fishing but harvest a wide diversity of resources, or obtain a high percentage of their meat but harvest just a few types of resources.)

Perhaps surprisingly, TRUCS found that hunting and fishing is widespread among all different kinds of households in rural southeast Alaska, regardless of income or other characteristics.

### Differences Among Native and Non-Native Households

- ***A higher proportion of Native than non-Native households fits the common image of subsistence users—30 percent as compared with 16 percent.***

- ***About 21 percent of Native households and 12 percent of non-Native households have low incomes but do relatively little hunting and fishing.***

The largest single Native group consists of the 30 percent of households with low incomes, high diversity, and high percentage of meat obtained through hunting and fishing. (Figure 2.) The largest non-Native group includes households with high incomes and low resource use (27 percent).

Among Native households with low incomes that do little or no hunting and fishing, about one-quarter are elders (over 60 years old) who perhaps can no longer hunt for themselves; another one-third are young adults. As we'll discuss later in the report, many in this group may actually depend on wild fish and game they receive from others.

Differences in hunting and fishing among Native and non-Native households can be attributed to many factors. Those who have lived in the community the longest may have more knowledge of the environment, acquire more diverse tastes, devote more of their time to hunting and fishing, and depend on hunting and fishing to strengthen social relationships. In southeast Alaska, more Natives than non-Natives would be in this situation.

People who grew up and have family in a community—who again are more likely to be Natives—are more apt to stay in that community regardless of income, even if they are not highly active in hunting and fishing. Some non-Natives may move into an area primarily for jobs and

secondarily for hunting and fishing opportunities; they may be less likely to stay if their incomes fall.

Regardless of income, 42 percent of Native households and 33 percent of non-Native households derive more than a quarter of their total meat and fish from hunting and fishing.

## Differences by Community Size

- *Small communities have the highest share—35 percent—of households that fit the most common image of subsistence users.*

- *There is a core group of low-income households—between 10 and 16 percent—in all communities, regardless of size, that do little or no hunting and fishing.*

- *Likewise, there is a fairly consistent group of high-income households—between 14 and 20 percent—in all communities that do a lot of hunting and fishing.*

- *No single group accounts for a majority of those who hunt and fish in any community. In communities of all sizes a wide variety of households harvest natural resources.*

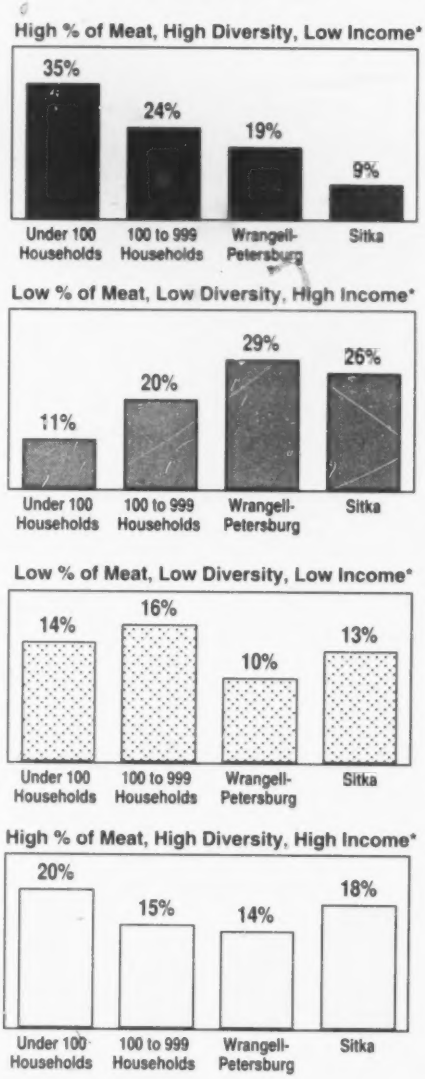
Figure 3 shows how characteristics of households vary among larger and smaller communities. Of the 25,500 people living in rural southeast Alaska, 7 percent live in the 17 communities with less than 100 households. A third of all rural residents live in the 11 communities of between 100 and 999 households, and another quarter live in Wrangell and Petersburg. One in three rural residents live in Sitka.

The proportion of households that have low incomes and do a lot of hunting and fishing drops as we move from smaller to larger communities. But while 35 percent of the households in the 17 smallest communities fit the most common image of subsistence users, another 20 percent of households in small communities have high incomes and also do a lot of hunting and fishing. That finding suggests that hunting and fishing among many residents may not be based on economic need, but is rather a choice that is a part of their lifestyle. Fifty-five percent of the households in the smallest communities derive more than 25 percent of their meat and fish requirements from wild fish and game.

In the 11 mid-sized communities, nearly a quarter of the households fit the most common image of subsistence users. On the other hand, one-fifth have high incomes and do little hunting and fishing. This finding suggests that in larger communities, where income suffices, hunting and fishing may decline.

In Wrangell and Petersburg, nearly one-fifth of the households have low incomes and a high dependence on hunting and fishing. Nearly 30 percent have high incomes and obtain little of their food through hunting and fishing. And finally, only nine percent of Sitka's households fit the most common image of subsistence users.

**Figure 3. Resource Use and Income By Size of Community**




*Categories defined on page 7.

Overall, the smaller the community the larger the group of residents who depend on hunting and fishing for more than a quarter of their meat, especially if they have low incomes. And the larger the community the larger the percentage of residents that have high incomes and rely on hunting and fishing for less than a quarter of their meat.

This diversity within communities makes classification of an entire community as urban or rural more complex. While it seems true that a bigger share of households in smaller communities rely more on hunting and fishing, it is equally true that regardless of size each community has groups that rely more and less on hunting and fishing. Such diversity mirrors the diversity of individual tastes, needs, and priorities.

## Amount of Harvest

- ***Thirty-four percent of rural southeast Alaska households annually harvest up to 80 pounds of fish and game per household member; 26 percent harvest between 81 and 250 pounds; and 25 percent harvest over 250 pounds.***

It's clear that hunting and fishing play a role in the lives of most rural residents of southeast Alaska—but the importance of that role varies sharply, as Figure 1 on the front page shows. A few households don't get any of their food from fishing and hunting, while 30 percent harvest half or more of all their total meat and fish. The amount of fish and game being harvested, and its importance as a food source, is crucial information for decision-makers examining subsistence questions.

### Harvest by Income

- ***Low-income households harvest less fish and game than higher income households—in both per capita and total amounts.***

- ***Households with higher incomes have a competitive advantage in hunting and fishing.***

- ***Fish and game are widely preferred sources of food among most households in southeast Alaska, regardless of their incomes.***

Households with the highest incomes harvest most per household member—an average of 238 pounds per year, as Figure 4 shows. However, as Figure 5 shows, households in the mid-income range harvest the largest number of total pounds—nearly 1.9 million pounds per year. That's because most survey households fall within the middle income group.

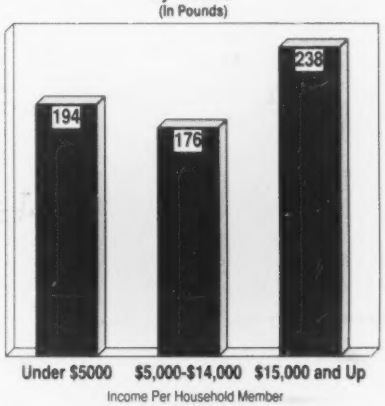



**Figure 4. Average Harvest Per Household Member By Income**
(In Pounds)

**Figure 5. Total Harvest By Income**
(In Thousands of Pounds)

The data for high income households show that fish and game harvests are not based just on economic need. In fact, data indicate that higher incomes are associated with increased harvests. Households with higher incomes may have an advantage in fishing and hunting, because they have more to spend on gear and equipment and on getting to harvesting areas.

TRUCS data show that higher income households travel, on average, twice as far from their communities to hunt deer. They are also more likely than lower income households to fly to deer hunting areas.

Subsistence regulations based on economic need would obviously most affect higher income households—which currently harvest more than lower income households.

## Harvests by Native and Non-Native Households

- ***Native households harvest about 9 percent more fish and game per person than do white households.***

- ***White households, which outnumber Native households by 3 to 1, harvest overall about 2.5 times more than Native households.***

As Figure 6 shows, the difference between Native and white per capita harvests is minimal—annual Native harvests per household member average 209 pounds, while white households average 191 pounds per member. However, both those groups harvest more—by about 25 percent—than do households of other ethnic groups.

Figure 7 shows the total harvest by ethnic group, in thousands of pounds. Here, the harvest by white households (more than 3 million pounds) overwhelms the harvest among Native households (about 1.2 million pounds) and the harvest by other ethnic groups (160,000 pounds). Those relative harvests reflect the composition of the population: 73 percent of southeast residents are white, most of the rest are Native, and only a relative handful are of other ethnic groups.

These data shed light on who would be affected if Alaska Natives were awarded preference for subsistence rights. TRUCS data show that in rural southeast Alaska, Natives and whites rely just about equally on fish and game, if we use pounds harvested per capita as a measure. Subsistence regulations giving preference to Natives would affect some white households that currently harvest just as much as Native households.

**Figure 6. Average Harvest Per Household Member By Ethnicity**
(In Pounds)

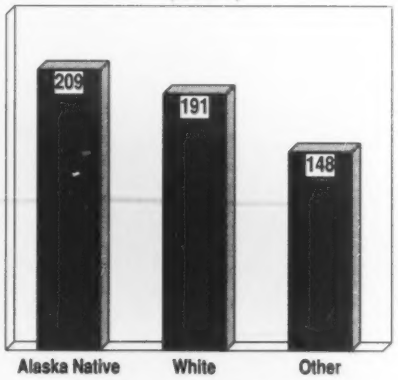
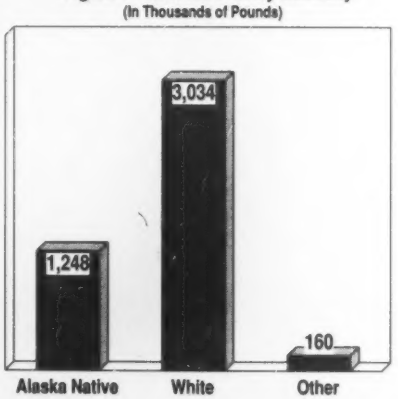



**Figure 7. Total Harvest By Ethnicity**
(In Thousands of Pounds)




## Harvest by Length of Time in Community

- ***Households with members who have been in southeast communities from 5 to 9 years and for more than 30 years harvest the most fish and game per capita.***

- ***The overall low level of mobility among households in rural southeast Alaska suggests that many might fit one criterion—length of residence—of the "traditional and customary" aspect of state and federal definitions of subsistence.***

- ***Relatively high harvest levels among newcomers suggest that the opportunity to hunt and fish draws many to the region.***

Yet another way to approach the question of who harvests how much is to break the household data down by length of residence. Part of the definition of subsistence is based on "traditional and customary use," which has included length of residence as one criterion. Of all rural southeast Alaska households, 30 percent have at least one member who has lived in the community for 30 years or more. About 16 percent have lived in their communities 20 to 29 years; 19 percent have lived in the same community 10 to 19 years; 15 percent have lived in their communities 5 to 9 years; and 20 percent of households had moved to their rural community less than 5 years before the TRUCS survey.

Some of the relative newcomers likely came in part to follow the hunting and fishing lifestyle. As Figure 8 shows, those who have lived in rural southeast communities from 5 to 9 years harvest an average of 212 pounds per household member each year—an amount second only to the 231 pounds harvested by those with 30 or more years' residence. The newest arrivals (those with less

than 5 years' residence) also harvest a significant amount—152 pounds per household member each year. This finding suggests that those who have lived in the community less than 5 years may still be learning how to harvest. Those who have lived in the community from 10 to 29 years may harvest less than longer term residents because they are busy raising families and providing cash incomes.

As Figure 9 shows, the combination of the high proportion of 30-year residents and their high per capita harvest means they harvest by far the most pounds: 1.7 million pounds per year. Their nearest competitors—those who have lived in their communities from 10 to 19 years—harvest about 735,000 pounds annually.

**Figure 8. Average Harvest Per Household Member By Length of Residence in Community**
(In Pounds)

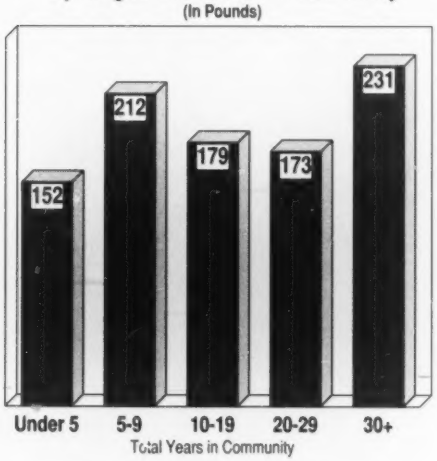
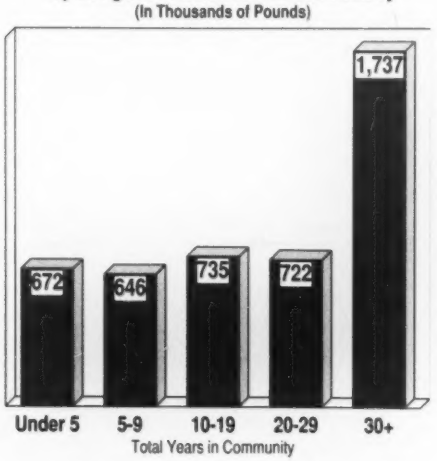



**Figure 9. Total Harvest By Length of Residence in Community**
(In Thousands of Pounds)




Overall, the relatively high levels of harvests among newcomers and old-timers alike reflect the wide range of interest in hunting and fishing in southeast Alaska.

## Harvests for Selected Communities

- ***Small communities harvest more per capita than larger communities, but account for less of the total harvest in rural southeast Alaska.***

Figures 10 and 11 show per capita and total harvests for selected communities which represent varying types of communities in the region. Edna Bay is a predominantly white community of 21 households in the northern part of the region. Hoonah is a traditional Native community of mid-size, as is Klawock. However, Hoonah is in the northern end of the region and Klawock is in the southern end. Skagway is a former gold rush town of 204 mostly non-Native households on the mainland northwest of Juneau. Sitka is the largest rural community in southeast; it is a mix of races, and has a cash economy centering around commercial fishing and logging. (See map on page 3 for community locations).

Among these communities, Edna Bay has the highest annual per capita harvest (517 pounds) but a low total harvest (36,000 pounds) because it is such a small community. The situation in Sitka is the reverse: a low annual per capita harvest (139 pounds) and a high total harvest (nearly 1.2 million pounds.) Skagway has both a low per capita harvest (52 pounds) and a low total harvest (30,000 pounds). Other communities fall between these extremes, and within communities of roughly the same size (like Hoonah and Klawock) there are different harvest levels. Hoonah has the highest per capita harvest in its size range (100 to 999 households), while Klawock's is in the middle for the same size range.

The differences in per capita and total harvest show the importance of considering more than one type of data in making decisions about subsistence use. Residents of a larger community like Sitka may not, on a per capita basis, depend on hunting and fishing as much as those in smaller communities. But by their sheer numbers they may harvest the most. However, larger size and economy do not preclude high dependence on fish and game. Petersburg households, for instance, have per capita harvests in the mid-range and a total harvest second only to Sitka's. And one in seven households that fit the most common image of subsistence users (as we discussed earlier) are in Sitka.

**Figure 10. Per Capita Pounds of Resource Harvest for Selected Communities**
(In Pounds)

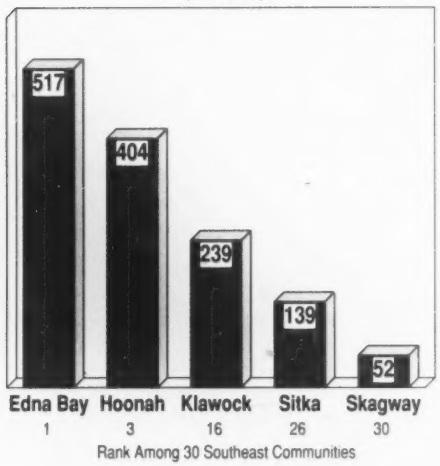
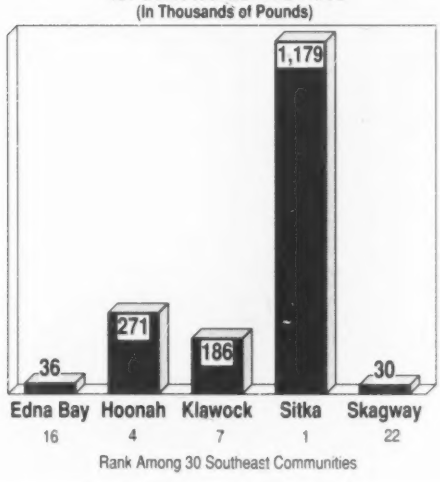



**Figure 11. Total Pounds of Resource Harvest for Selected Communities**
(In Thousands of Pounds)




Policymakers considering size of community as a criteria for subsistence use should keep in mind several points. Changing a larger community from rural to urban designation could reduce the overall subsistence harvest in a region. But as we've seen, within large communities there is a mix of residents who are more and less dependent on fish and game harvests: community size and economy do not necessarily preclude high dependence on hunting and fishing. And in some smaller communities—like Skagway—hunting and fishing is less common than in some larger communities.

## Diversity of Resources Harvested

- ***More than half of all households (61 percent) in rural southeast Alaska harvest at least four different types of fish, wildlife, and plant resources. One in ten households harvest more than ten different types of resources.***

Southeast Alaska is a land of abundance, and rural residents make use of a wide range of natural resources. The TRUCS survey measured personal use of 42 different resources—from deer to halibut to sea lettuce. (See Table 2.) The diversity of species used by households can tell us something about their level of reliance on natural resources. For instance, some households may harvest only deer, while others may take advantage of all sorts of resources to fill a wider range of their overall living needs. Such differences may be the result of household income levels, ethnicity, or place of residence.

**Table 2. Resource Types Surveyed**

**Game**

Deer
Moose
Mountain Goat
Black Bear
Brown Bear
Waterfowl
  Ducks
  Seabirds
  Canada Geese
  Seabird Eggs
Other Furbearers

**Marine Mammals**

Harbor Seal
Other

**Plants**

Beach Greens
Seaweed
Berries
Firewood
Green Timber
Roots

**Fish**

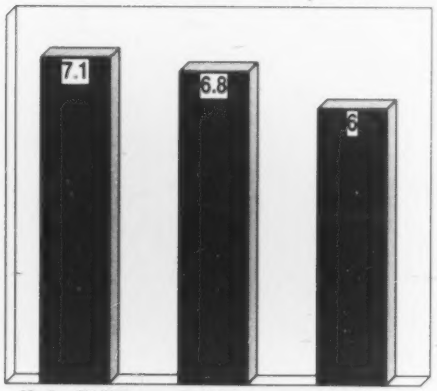
Salmon
  Kings
  Sockeye
  Coho
  Pinks
  Chum
Other Finfish
  Cod
  Halibut
  Flounder, Sole, Flat Fish
  Rock Fish
  Herring
  Hooligan
  Dolly Varden, Steelhead, Trout
Invertebrates
  King Crab
  Dungeness Crab
  Tanner Crab
  Shrimp
  Sea Urchins
  Abalone
  Octopus
  Scallops
  Gumboot
  Sea Cucumber
  Clams, Cockles
  Herring Eggs

## Diversity by Income Level, Ethnicity, and Size of Place

• ***Neither income level nor ethnicity makes a significant difference in the diversity of fish and game that households harvest, and size of community makes only a minor difference.***

As shown in Figure 12, those households with less than $5,000 annual income per member harvest on average only one more species type than do households with per member incomes exceeding $15,000—7 per year as compared with 6. This finding is consistent with earlier findings that hunting and fishing in rural southeast Alaska is in many cases based not on economic need but rather on preference or tradition.

**Figure 12. Average Number of Resource Types* Harvested Per Household By Income**

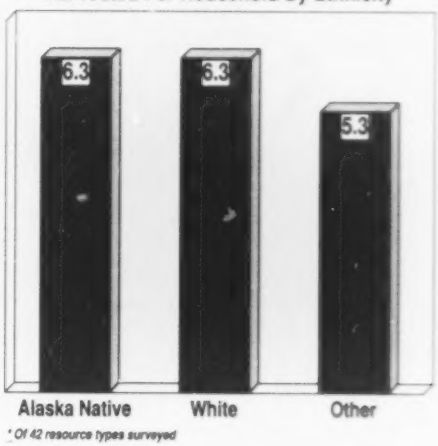



However, there is some difference in species harvested by households at different income levels. In general, TRUCS found that higher income households more frequently harvest halibut and king crab and other more sought-after species, whereas lower income households more frequently harvest less popular species such as sea cucumbers, gumboots, and herring eggs.

This difference in harvest is in part because those with higher incomes can afford to get to harder-to-reach harvest areas. Because they can afford to go more places, and because hunting and fishing isn't a matter of economic need, they may be more selective in what they harvest. Those with lower incomes, on the other hand, may be confined in where they can harvest but may depend economically on harvesting—so they are more likely to take whatever is more easily available.

There is also little difference in the number of species harvested by Native and non-Native households. As Figure 13 shows, both Native and white households harvest on average 6.3 types of fish and game per year, and households of other ethnic groups harvest 5.3.

**Figure 13. Average Number of Resource Types* Harvested Per Household By Ethnicity**

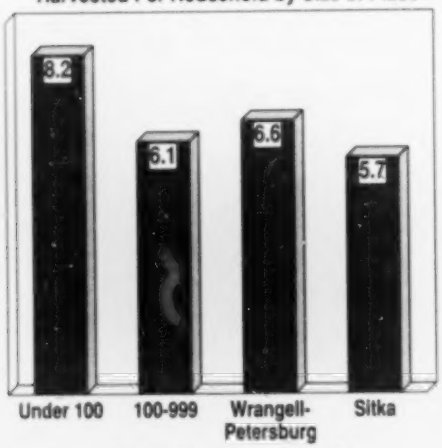



However, partly because a bigger share of Native households are low-income, they may be harvesting more of their traditional foods—like herring eggs—which are more accessible and for which newcomers may not have developed a taste.

Overall, this finding about the similar number of species harvested by all households, regardless of ethnicity, underscores the idea that hunting and fishing in southeast Alaska may be as much a matter of choice as of tradition.

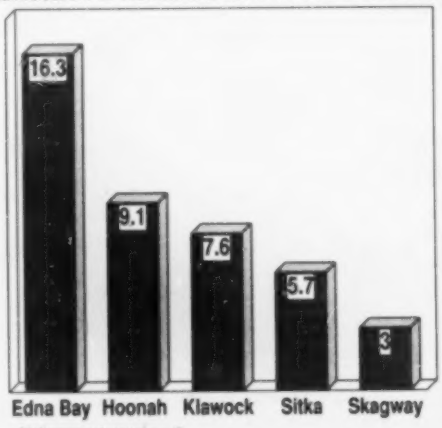
Size of place does make some minor difference in the number of resources households harvest, as Figure 14 shows. Households in the smallest communities harvest on average 8 different resources per year, while households in larger communities average about 6. We might expect that residents of smaller communities would place more emphasis on harvesting resources than would residents of larger communities, where more activities are available.

Figure 14. Average Number of Resource Types* Harvested Per Household by Size of Place




* Of 42 resource types surveyed

Figure 15. Average Number of Resource Types* Harvested Per Household for Selected Communities




* Of 42 resource types surveyed

## Diversity Among Selected Communities

- ***Most resource types are harvested in most communities, but the relative importance of different resources varies across the southeast region.***

- ***The average number of resource types harvested per household is several times larger in some communities than in others.***

The uneven distribution of subsistence resources across the region, the richness of the resource base in certain areas, and a community's proximity to a given resource help explain differences in community fish and game harvests. Access to and cost of store-bought goods may also be factors in the diversity of species harvested.

As shown in Figure 15, Edna Bay households harvest the greatest diversity of resources (an average of 16 species) while Skagway households harvest the least diverse (an average of 3). One important geographic difference between the two communities is that Edna Bay is on an island while Skagway is on the mainland. Edna Bay may have a higher deer population and more accessible intertidal and fishing areas. Skagway, located at the end of a long fjord, has a more rugged topography and limited intertidal and fishing sites. Unlike Edna Bay residents, Skagway residents harvest mountain goats. Hoonah harvests the greatest variety of species among communities in its size range.

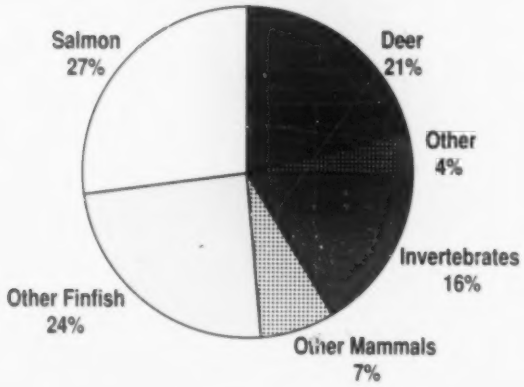
Figure 16 shows the relative importance of different fish and game resources for all survey communities and for selected communities. The relative importance of each is calculated as the percentage of total edible pounds harvested. Resource categories shown cover many different resource types (for example, salmon includes all five species). Deer, salmon, and other finfish (halibut, Dolly Varden, and others) make up over 70 percent of fish and game harvested in rural southeast Alaska. Very few communities harvest moose; moose occur only in a few areas of southeast Alaska.

In Edna Bay, deer and other finfish are as important as they are regionwide, but other mammals are more important than in the region as a whole. Other mammals also make up 15 percent of the harvest in Hoonah, but salmon and deer are as important as they are regionwide. Traditionally Native communities such as Hoonah and Klawock can harvest harbor seal, while primarily white communities cannot. (Only Natives are exempt from restrictions on marine mammal hunting under the federal Marine Mammal Protection Act.)

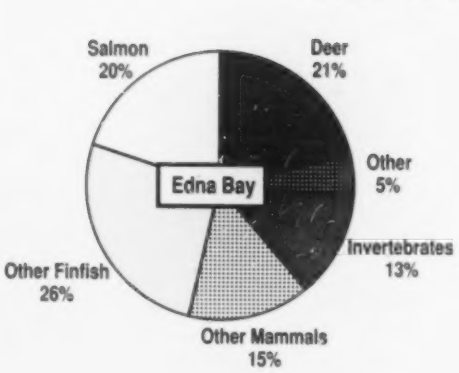
In Skagway, by contrast, salmon and other finfish are much more important than deer, which make up only six percent of the harvest. Invertebrates, too, play a bigger role in Skagway, making up nearly a quarter of the harvest. Sitka follows the regionwide profile most closely, with only slightly higher deer harvest levels.

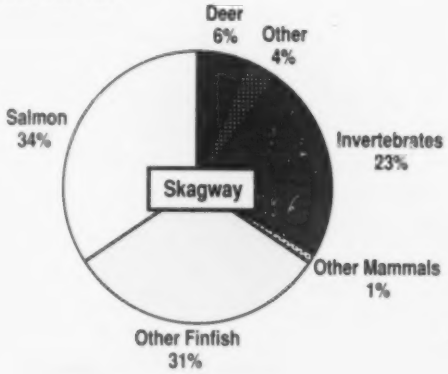
# Figure 16. Importance of Different Fish and Game for All and Selected Survey Communities

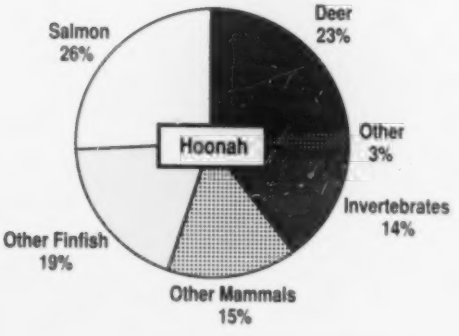
## All Survey Communities

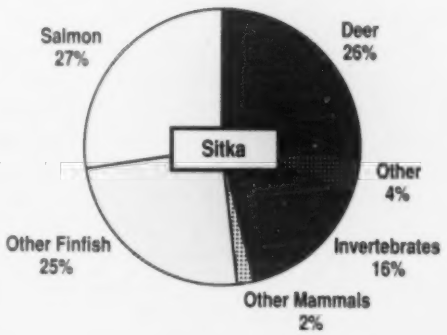



## Selected Communities



Examining the diversity of resources used across the region provides some insight into the differences based on geographic location. In addition to variability in the biological productivity of the land base, however, fish and game harvest regulations and other sociocultural considerations also help to determine levels and diversity of resource harvests in different parts of southeast Alaska.

## Giving and Receiving

• ***Three-quarters of households in rural southeast Alaska give away some part of their harvest. A third of those households give away at least four different types of resources annually.***

Fish and game that rural residents of southeast Alaska eat come not only from their own harvests but from sharing among family and friends. An important part of the hunting and fishing lifestyle for many is sharing harvests with family and friends, both within and outside their own communities. Sharing is a crucial indicator of the importance of fish and game for social, economic, and cultural purposes. Therefore, in order to get a complete picture of hunting and fishing in southeast Alaska, we must look at this sharing of harvests.

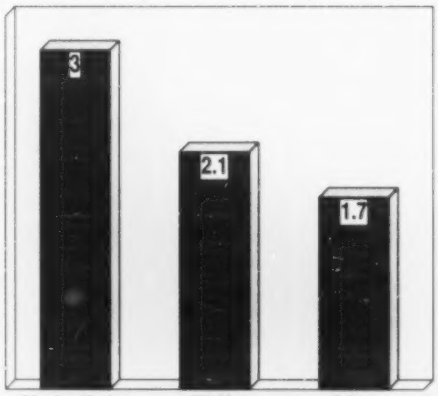
### Sharing by Native and Non-Native Households

• ***Native households both give away and receive more types of resources than do non-Native households.***

Traditionally, one of the special characteristics of Alaska Native culture that is often mentioned is resource sharing. Regionwide, Native households give away an average of three different kinds of resources annually—as compared with two among white households (Figure 17). This pattern is even more pronounced in the data on receiving, shown in Figure 18. Native households receive on average nearly twice as many (5.3) different resources as compared with white (3.2) and non-Native, non-white (3.7) households.

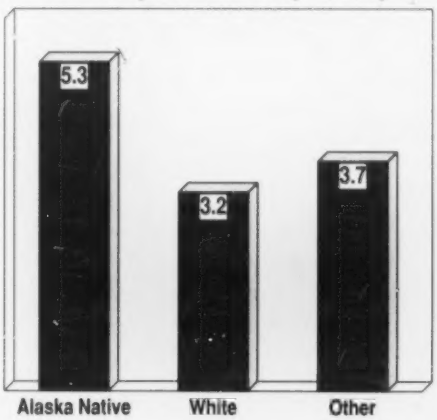
These data show that the cultural tradition of sharing among Natives remains an important factor in fish and game harvesting. Sharing among non-Native households, while not as prevalent as among Native households, is also common.

**Figure 17. Average Number of Resource Types* Given Away Per Household by Ethnicity**




* Of 42 resource types surveyed

**Figure 18. Average Number of Resource Types* Received per Household By Ethnicity**




* Of 42 resource types surveyed

### Sharing by Income

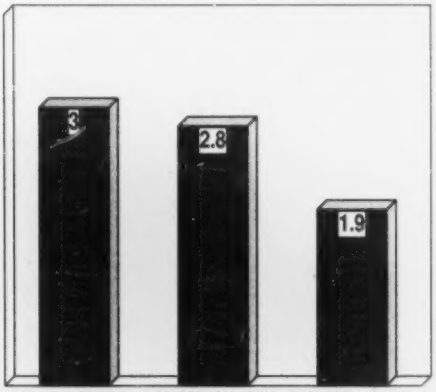
• ***Households with low incomes both give away and receive more types of resources than do higher income households.***

Another common perception about subsistence activities is that sharing is more pronounced among those whose need is greatest. The TRUCS data on all hunting and fishing in rural southeast Alaska in fact illustrate that phenomenon—but there is not a redistribution of fish

and game from wealthiest to poorest households. Rather, low-income households both receive and give away more resources than do high-income households.

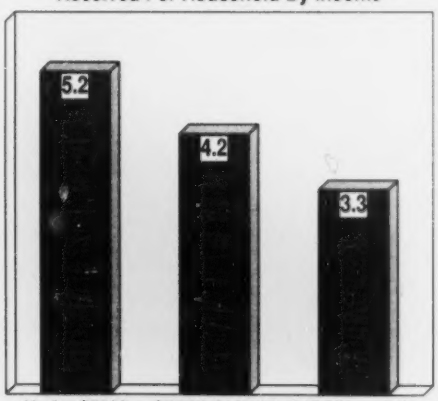
As shown in Figures 19 and 20, low-income households give away on average 3 resources annually and receive 5.2. Higher income households give away fewer than 2 resources and receive about 3. The middle-income households fall between the other two, both in giving and receiving.

**Figure 19. Average Number of Resource Types* Given Away Per Household By Income**




* Of 42 resource types surveyed

**Figure 20. Average Number of Resource Types* Received Per Household By Income**




* Of 42 resource types surveyed

Among just Native households (not broken out in the figure), the pattern is different. Native households at all income levels give away, on average, about the same number of different resource types (3.1, 3.7, 3.0 for low, middle, and high income groups). The differences in receiving were also less pronounced among Native households at different income levels. This finding may show that sharing is more of a cultural element for Natives, while among non-Natives it may be more of an economic consideration.

## Sharing Deer Among Native and Non-Native Households

- ***Sharing deer meat is common among all types of survey households, with 61 percent giving away venison and 42 percent receiving it.***

- ***Native households in rural southeast Alaska both give away and receive nearly twice as many pounds of deer meat as do white households.***

Another way to examine the extent of resource sharing among households is to look at the amount given and received. TRUCS collected data on the amount of sharing of deer and salmon harvests only. Deer harvests alone make up 21 percent of the harvest regionwide (see Figure 16).

Sharing substantially increases the proportion of households consuming deer—47 percent of households that do not harvest deer meat themselves receive it. This means that a total of 66 percent of all rural southeast households (excluding Sitka and Yakutat, for which we do not have data) obtain deer meat either through personal harvest or as gifts.

As Figures 21 and 22 illustrate, Native households share more deer meat than white households. Native households annually give away and receive nearly twice as many pounds of deer meat as white households. Interestingly, non-Native, non-white households also give away nearly twice as many pounds of deer meat as white households. (Non-Native, non-white residents are, however, a small part of the southeast population.)

White households share less, even though their average harvest of deer meat is about the same as that of Native households—112 pounds per year as compared to 125 pounds. The higher level of sharing among Native households seems to confirm that the traditional norms of resource sharing have retained their vitality in the Native cultures of southeast Alaska.

Figure 21. Average Pounds of Deer Given Away Per Household By Ethnicity

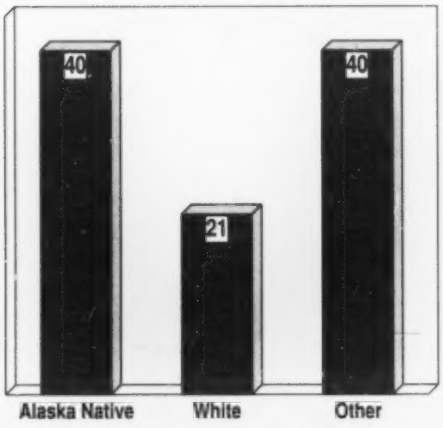
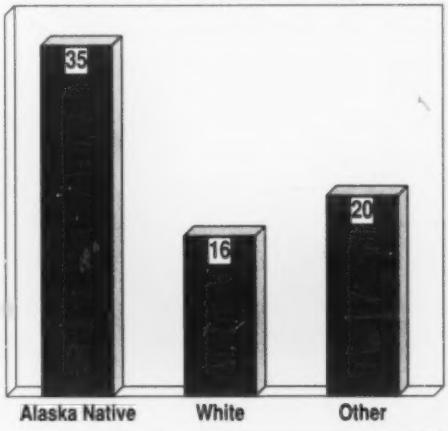



Figure 22. Average Pounds of Deer Received Per Household By Ethnicity




## Sharing Deer by Income

• ***Households in the middle income range give away the largest proportion of their deer harvest, while lower income households receive the most deer meat.***

Harvests and sharing of deer meat among households at different income levels are shown in Table 3. Low-income households average the highest harvests of deer meat—151 pounds per year—while middle-income households average 125 pounds and high-income households 88 pounds.

Table 3. Average Number of Pounds of Deer Harvested, Given Away, and Received Per Household
(by Household Income)

| Income per Household Member | Pounds Harvested | Pounds Given Away | Pounds Received |
|---|---|---|---|
| Less than $5,000 | 151 | 25 | 35 |
| $5,000 to $15,000 | 125 | 27 | 26 |
| $15,000 or More | 88 | 17 | 23 |

While low-income households give away more total pounds than those in the highest income range, it is middle-income households who give away the most pounds per year (27) and the highest proportion of their harvest (nearly 22 percent).

Low-income households receive on average 35 pounds of deer meat each year, which is about a third more than households with higher incomes receive. Because low-income households also harvest more deer meat, it appears that poorer households eat more deer meat than do their wealthier neighbors.

It is essential for policymakers considering the subsistence issue to take into account the importance of giving and receiving fish and game among households, especially Native households. Many households that don't harvest fish and game themselves may still depend on significant quantities and types of resources through what they receive. This is especially true of certain groups of residents, such as the elderly, who may not be able to harvest for themselves. Likewise, many who seem to harvest more than their particular household may need could be fulfilling the cultural and social role of giving to others who are unable to harvest enough for themselves.

## Geographic Range and Intensity of Hunting and Fishing

Up to this point we've talked just about various aspects of fish and game harvests among rural residents of southeast Alaska. We now look at the other kind of data available from the Tongass Resource Use Cooperative Study: information on the range and intensity of hunting and fishing. Although TRUCS collected this geographic data for all 42 species surveyed, for purposes of clarity here we are presenting just information about the range and intensity of deer hunting. Deer are harvested throughout the region, and are at the center of some resource-use issues; for instance, the controversy over how logging affects deer habitat.

### Range of Deer Hunting

- ***The range and total area used for deer hunting varies by community with little overlap, suggesting the importance of community size and accessibility.***

Map 2 shows the geographic area that three rural southeast communities (chosen to represent communities of different sizes) use for deer hunting. Survey respondents were asked to draw on a map all the areas they had ever used for deer hunting—not just what they had used in the year before the survey, but what they had hunted in previous years as well. These responses were combined to show the community-wide use area.

Pelican is a small community of 82 households; Angoon is a medium-sized community of 140 households; Sitka is the largest rural community in southeast Alaska, with 2,872 households.

As the map illustrates, Sitka has by far the greatest range and area of use of the three communities. Not only do Sitka residents hunt on much of Baranof Island, but they also hunt a large part of Chichagof Island to the north, along the coast of Kuiu Island to the southeast, and Admiralty Island to the east of Sitka. In fact, areas right along the coast seem to be especially important for hunting.

The more extensive range of use for Sitka is partly explained by its significantly larger population as compared with that of Angoon and Pelican. The larger the community, the further residents go to hunt and fish. In addition, Sitka residents have the highest per capita incomes among rural southeast residents. This may allow them to purchase more and better boats and other equipment, making more hunting areas accessible.

Angoon's area of use is primarily on Admiralty Island. In fact, Angoon residents hunt on all except the very highest mountain peaks of the island. Some of this area, especially right around the community itself, is also used by Sitka hunters (who may be relatives of Angoon residents or even ex-Angoon residents themselves). Angoon hunters also share the coastal areas across Chatham Strait with Sitka hunters. The map shows that Angoon hunters do not travel as far by boat as do Sitka hunters; most of Angoon's hunting area is more accessible by land.

Hunters from Pelican also concentrate more on areas closest to their community, primarily the northern end of Chichagof Island. Their furthest range is the northern end of Admiralty Island. There is minimal overlap in hunting areas among all three communities, suggesting how important accessibility is to deer hunting.

### Intensity of Deer Hunting

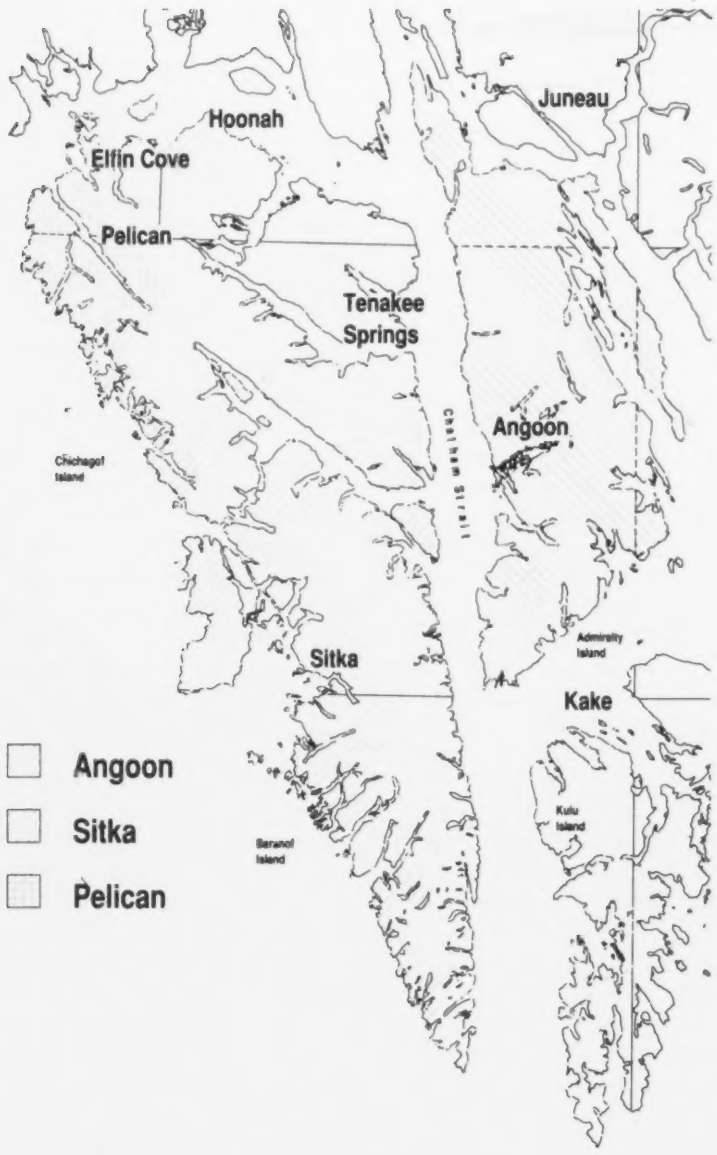
TRUCS data can show not only the entire areas southeast residents use for hunting and fishing, but also the intensity with which residents of the entire region and of individual communities use various areas.

Map 3 shows the intensity of deer hunting in one part of southeast Alaska. Intensity on this map is measured by the total numbers of households that reported ever using an area. (TRUCS data was also collected on areas most frequently used and most reliable.) The darker the shading on the map, the more households estimated using an area.

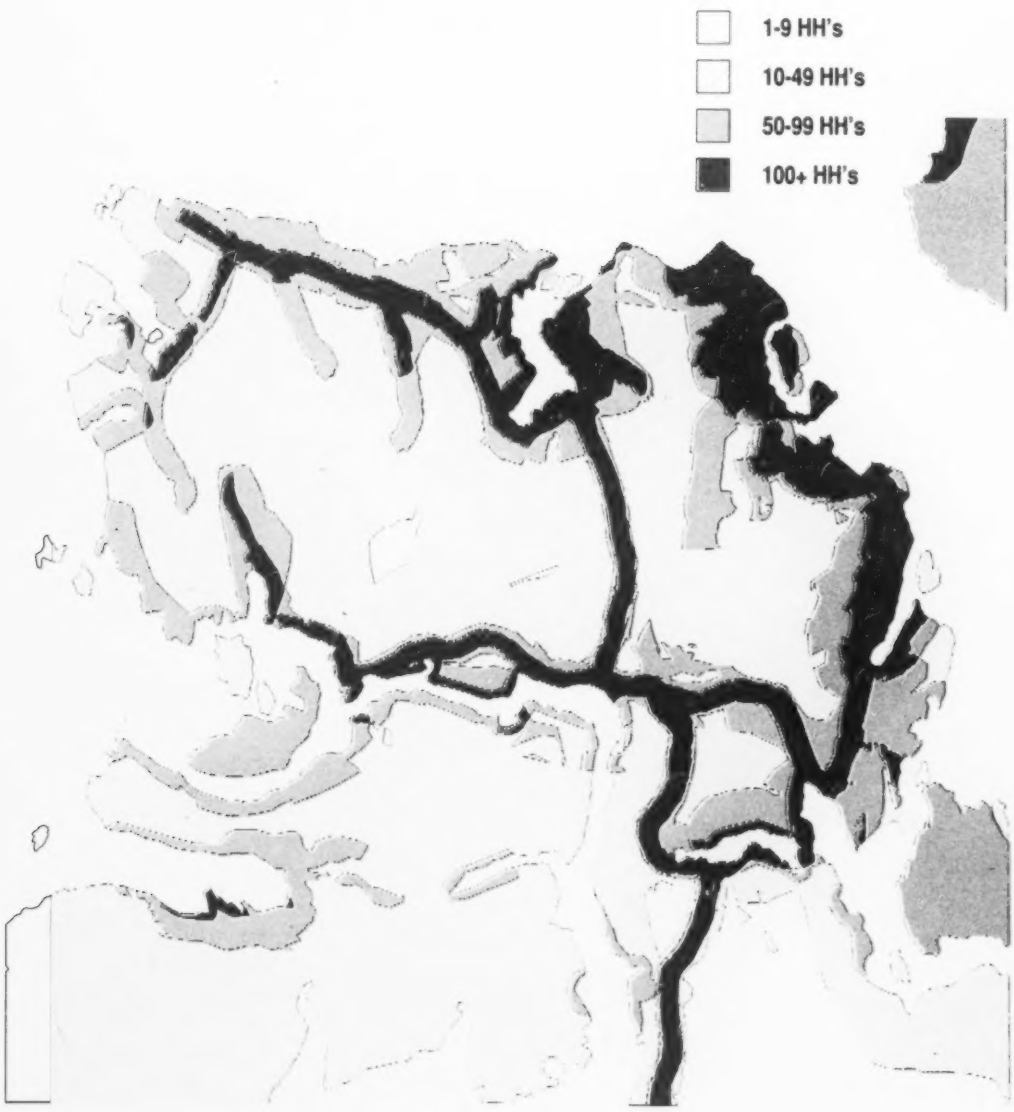
We are not, however, identifying the location of this map. We are using it only to show how TRUCS data could be used by subsistence policymakers. TRUCS researchers promised southeast residents that the specific locations of their best hunting and fishing areas would not be published in a way that others could readily use as a guide.

In general, we can assume that more people hunt in certain areas because they are easily accessible and because more deer are in those areas. Information about such areas is important for those determining subsistence policy. The more intensely an area is used for hunting and fishing, the greater any potential impact from other uses—such as logging, commercial fishing, or construction.

## Map 2. Areas Ever Used for Deer Hunting
## Sitka, Pelican and Angoon



## Map 3. Number of Households Identifying Area Ever Used for Deer: Regional Total



## Conclusion

As we've seen, people who hunt and fish in southeast Alaska can't easily be categorized by income, community size, ethnicity, or length of residence alone. Subsistence policies based on any one of these criteria will exclude some portion of those who currently hunt and fish.

The TRUCS data help paint a clearer picture of hunting and fishing in much of southeast Alaska. Hunting and fishing is important to a large number of rural southeast households. Eighty-five percent of them harvest some fish and game. Many households that don't hunt and fish themselves receive resources from others.

No one group stands out as representing the majority of those who hunt and fish. Within every community there is a wide range of residents with different incomes and other characteristics who rely on fish and game to different degrees.

Many of us probably think of subsistence users as those with low incomes who harvest a lot of their food from a variety of fish and game. Households that fit that model account for less than one-fifth of all those who hunt and fish in the survey communities. A bigger share of Native households than other households do fit the common image of subsistence users, but even among Native households they make up only 30 percent. And Natives in rural southeast Alaska do not on average harvest significantly more fish and game per capita than do non-Natives. A strong cultural influence is apparent among Native households, which share fish and game more than other households do.

Income in itself is not an accurate gauge of relative levels of hunting and fishing. While a big share of low-income households (both Native and non-Native) rely on hunting and fishing for much of their food, some low-income households do very little hunting and fishing. Low-income households do harvest somewhat more deer meat (one of the most important species of game in the region) than do higher income households, but the difference is not large and on average households at all income levels harvest significant amounts of deer.

A bigger share of residents of the smallest communities rely more on fish and game. But even in the largest survey communities of Wrangell, Petersburg, and Sitka, significant numbers of households get an important part of their food by hunting and fishing.

And while very long-term residents do tend to harvest more fish and game, even relative newcomers to rural southeast communities harvest substantial amounts.

Overall, we can say that while some southeast residents hunt and fish because of economic need, many more do so as a matter of choice. Determining who among the thousands of Alaskans who hunt and fish should be classified as subsistence users—and therefore have first rights to fish and game—will be extremely complex. Simple, broad exclusions based—for instance—on where someone lives, will fail to take into account traditional use, economic dependence, and other important factors. In a major decision that overturned Alaska's subsistence law, the Alaska Supreme Court in 1990 ruled that designating just rural residents as subsistence users is unconstitutional.

As pressures on subsistence resources continue to increase, solutions will become crucial. While it's important to note that the information we've presented is just for communities surveyed in southeast Alaska, such data would also be useful for other areas of the state. We can't extrapolate conclusions made here to other parts of the state, because of regional variations in income, ethnicity, community size, and types and diversity of species.

Such data for all regions of Alaska would assist policymakers and land managers in making decisions about competing demands for fish and game and about developments that could affect fish and game.

Statistical information alone obviously can't sort out the maze of legal, political, cultural, and economic issues involved in the subsistence controversy. But such information can enable policymakers to identify the consequences of how they allocate fish and game among various users. And the more we know about the characteristics of those who hunt and fish, the closer we might come to a fair and comprehensive solution of the subsistence issue.

## End Notes

[1]Harvests also include some berries and other plants, but fish and game make up the overwhelming majority. So for simplicity we refer to fish and game harvests throughout this *Review*. Table 2 on page 13 shows resources surveyed.

[2]Eighty-three percent of the households contacted completed the survey. The sample size varied by community size to give comparable levels of reliability in the results.

[3]***Subsistence Management and Use: Implementation of Title VIII of ANILCA.*** U.S. Department of the Interior, Fish and Wildlife Service, March 1988.

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